



Second Announcement
and call for **papers**

International conference on
WATER SCARCITY,
GLOBAL Changes,
and **GROUNDWATER**
MANAGEMENT RESPONSES

1-5 December 2008, University of California, Irvine, United States

Convened by UNESCO, the University of California, Irvine and USGS



RATIONALE

Global changes, such as population growth, climate variability, expanding urbanization, often combined with pollution, severely affect water availability and lead to chronic water shortage in a growing number of regions. It is estimated that, within 25 years, two-thirds of the world's inhabitants will live in countries with serious water problems.

Inventive approaches and innovative technologies have to be developed to call for every possible water resource. It has become evident that groundwater is one of the most important natural resources, being the sole resource for some countries, and the main basis of irrigation worldwide, with more than one-third of the landmass irrigated by groundwater, and the main source of drinking water for a number of countries.

Water scarcity is not always the result of a physical lack of water resources but also the result of inadequate institutional and managerial organization. For instance, according to the 2nd World Water Development Report, an estimated twenty-six countries, totalling more than 350 million people, with an apparent adequate availability of water, suffer from severe water scarcity because of problems in water management and governance.

An especially critical issue, where science alone is insufficient, concerns shared water resources, with a special attention to internationally shared aquifers: scarcity increases competition among users, potentially leading to tensions and conflicts whose solutions involve a multi-disciplinary approach, based on political, cultural, ethical and scientific instruments.

Therefore, while water scarcity and global change certainly ask for innovative scientific and technological solutions, they also pose technical, socio-economic, cultural and ethical challenges. This requires a multi-disciplinary approach that integrates science, technique, institutional organization, management, economy, culture and history, combined to a good perception of risk and an adequate use of risk/benefit analysis. Education and communication are critical connectors of the components of such an approach.

Examining all types of water resources available in a watershed or a region, stressing the unique role of groundwater in water-scarce areas and its significance in most other areas, identifying the difficulties due to the specific characteristics of groundwater and evaluating the adaptability of existing or new methods and instruments to these specificities, the conference should serve as a place to:

- share knowledge, experience and know-how on water scarcity and, more generally, climate change science and the anticipated effects of global changes, either natural or induced by human activities, on water and, specifically, groundwater resources, such as desertification, health aspects, poverty and hunger, among others;
- learn about professional practices, intended to cope with water scarcity and global change effects and relating to decision, risk/benefit analysis, action, finance and communication;
- present and discuss innovative scientific, technological, policy, economic and institutional instruments and methods, and emphasize multi-disciplinary approaches and the improvement of communication between stake-holders;
- establish long-term collaborations.



OBJECTIVES OF THE CONFERENCE

Bringing together leading water management and climate change experts, scientists and engineers, policy-makers, lawyers and economists, and executives of water services of local and regional authorities:

- 1) Present innovative and appropriate technologies to address water scarcity and global change effects on water availability and quality, explore the specific scientific and technical tools for groundwater studies and management, and discuss how to incorporate such technologies into short-term decision-making and long-term water management and policy-making;
- 2) Exchange ideas on communication among political decision-makers, financial actors, scientists, technical services of local and regional authorities, service and engineering companies, operators and builders, as a tool for improved management of water scarcity and global change effects on water availability and quality, with an emphasis on groundwater aspects;
- 3) Exchange ideas and experience concerning the involvement and education of civil society in water scarcity understanding and evaluation, in the planning of solutions and the evaluation of their consequences, in the learning of groundwater realities, specificities and significance, with an emphasis on elementary and high school students and their teachers;
- 4) Establish mechanisms for international cooperation and experience-sharing among institutions for higher education and research, local authorities, consulting and engineering firms and practitioners, and others, taking into account cultural, historic and, in general, human dimensions, in relation to water scarcity and global change studies;
- 5) Produce a policy proposal and an action plan for a concrete and practical follow-up to the proposed conference and, also, to contribute to the **IHP-VII**, UNESCO's International Hydrological Programme Seventh Phase (2008-2013), and prepare for the **5th World Water Forum (Istanbul, Turkey, March 2009)**. Specifically:
 - the **Irvine Declaration** identifying water resources management principles aimed at answering global change and scarcity challenges, and recognizing the role and significance of groundwater and the interdependency of surface water and groundwater resources;
 - the **Irvine Agenda** formulating a strategy defining the objectives, methods and instruments for the implementation of the Irvine Declaration.

CONFERENCE THEMES AND TOPICS

THEME I: Issues and challenges of global changes impacts on river basins and aquifer systems

- Assessment methods and indicators of impacts of global change on the hydrological cycle and water resources
- Emerging issues of concern: new pollutants and nanoparticles
- Vulnerability and resilience to episodic hydrological events
- Pressures on groundwater resources: e.g. population growth, climate change, salt water intrusion
- Large water basin transfers
- Demographic changes – Population shifts
- The water energy nexus
- Issues and challenges of water scarcity and global changes on agriculture

THEME II: Improving water governance for sustainable responses to water scarcity and global change impacts on water

- Water management economic and financial evaluation tools
- Financing and pricing systems in water production, supply, waste water treatment and water intended for reuse
- National contemporary policies and legislations
- Global environmental law
- Integrated Water Resources Management: governance and sustainability aspects
- Global citizenship and public participation, the relationships of a population to water
- Transboundary large rivers and aquifer systems management

THEME III: Ecohydrology for sustainability

- Risk-based environmental management under uncertainty and risk mitigation
- Groundwater-dependent ecosystems, protection, remediation and mitigation strategies (vulnerable systems: coastal areas, islands, wetlands, extreme arid zones, mountain hydrology)
- The sustainable city of the twenty first century: new ecohydrological approaches to urban water management responses to global changes and water scarcity

THEME IV: Water and life support systems

- Water quality and public health
- Poverty alleviation and water quality protection in scarce water resources areas, with an emphasis on groundwater vulnerability and sustainable use
- Augmenting scarce water resources, especially for Small Islands Developing States (SIDS),
- Water for human security and community participation
- Strategies to improve the quality of life through water supplies in urban, periurban, informal settlements, rural areas, islands or coasts subject to water scarcity and population growth



THEME V: Traditional and innovative techniques and technologies supporting the identification and remediation of water scarcity issues and global change impacts on water resources

- Remote sensing technologies and their applications in developing countries
- Isotopes applications in hydrology
- Integration of geospatial data for the modeling of natural hazards and hydrological extremes
- Forecasting models and monitoring systems
- Innovative technologies on Managing Aquifer Recharge (MAR)
- Wastewater treatment and reuse, especially through groundwater replenishment, in water scarce regions and rapidly expanding urban areas (e.g. aeration lagoons and constructed wetlands)
- Individual potabilization and sanitation technologies (point-of-use water treatment, desalination...)

THEME VI: Information and communication, education and capacity building

- Information and communication methods and techniques for the integration of science and policy
- Information and communication for public participation: possible solutions and their legal and financial implications
- Enhancing communication between experts and practitioners from different decision levels, disciplines and professions to bridge knowledge and practice for sustainable water management
- Role of NGOs in water sustainability
- Curricula on water scarcity and global changes, adapted to specific target groups
- Capacity building strategies and opportunities to develop specific national and regional capacities at the scientific, managerial and decision-making levels



CHAIRPERSONS

- Dr. Andras Szöllösy-Nagy, Director of the Division of Water Sciences, UNESCO
- Dr. Matt Larsen, USGS, Chair of the US IHP National Committee
- Prof. William Cooper, Director of the Urban Water Research Center, University of California, Irvine

INTERNATIONAL STEERING COMMITTEE

- Dr. Alice Aureli, UNESCO-IHP
- Prof. William Cooper, University of California, Irvine, USA
- Prof. Jay Famiglietti, University of California, Irvine, USA
- Prof. Jean Fried, University of California, Irvine, USA and UNESCO
- Dr. Matthew Larsen, USGS, US IHP National Committee
- Dr. Verne Schneider, USGS, US IHP National Committee
- Prof. Joseph Westphal, University of Maine, USA

INTERNATIONAL SCIENTIFIC COMMITTEE

Chairpersons

- Prof. Jean Fried, University of California, Irvine, USA and UNESCO
- Prof. Joseph Westphal, University of Maine, USA

Members

(Proposed provisional list to be confirmed)

- Dr. Shakeel Ahmed, National Geophysical Research Institute, India
- Dr. Pradeep Aggarwal, IAEA
- Dr. Dalal S. Alnaggar, RCTWS, Egypt
- H.E. Dr Ali S. Al-Tokhais, Deputy Minister, Ministry of Water Affairs, Saudi Arabia
- Dr. Abou Amani, UNESCO Accra
- Prof. Reza Ardakanian, UNW DPC
- Dr. Winston Bennet, Caribbean Community Climate Change Center, Belize

- Dr. Jhon Bowleg, Water and Sewerage Corporation, Bahamas
- Dr. Benedito Braga, ANA, Brazil
- Prof. Antonio Brambati, IUGS
- Dr. Eberhard Braune, UNESCO Chair, South Africa
- Dr. Stephano Burchi, FAO
- Dr. Greg Christelis, Ministry of Agriculture, Water and Forestry, Namibia
- Dr. Peter Dillon, CSIRO, Australia
- Dr. Jean-François Donzier, INBO
- Dr. Al Duda, GEF International Waters
- Dr. Stephen Foster, IAH
- Prof. Jacques Ganoulis, UNESCO Chair INWEB, Greece
- Dr. David Grey, World Bank
- Dr. Karen Grothe Villholth, IWMI, Sri Lanka
- H.E. Dr Nadhir Hamada, Minister of Environment and Sustainable Development, Tunisia
- Prof. Arturo Keller, University of California, Santa Barbara, USA
- Dr. Ralf Klingbeil, BMZ, Germany
- Prof. Raul Lejano, University of California, Irvine, USA
- Dr. Peter Letitre, IGRAC (UNESCO/WMO Center)
- Prof. Gatze Lettinga, Wageningen University, The Netherlands
- Prof. Ramón Llamas, Complutense University of Madrid, Spain
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- Dr. Jose Luis Martin-Bordes, UNESCO-IHP
- Prof. Perry L. McCarty, Stanford University, USA
- Dr. Richard Meganck, UNESCO-IHE
- Dr. Michela Miletto, OAS
- Prof. Norman L. Miller, University of California, Berkeley, USA
- Dr. Zelimir Pekas, Croatian Waters, Croatia
- Dr. Didier Pennequin, BRGM, France
- Dr. Shammy Puri, IAH
- Prof. Stephen Ragone, US IHP National Committee
- Dr. Phera Ramoelli, SADC
- Dr. Fabrice Renaud, UNU-EHS



- Dr. Alfonso Rivera, Geological Survey of Canada
- Prof. Sherwood Rowland (Nobel Prize, Chemistry, 1995), University of California, Irvine, USA
- Prof. G. Scott Samuelsen, University of California, Irvine, USA
- Prof. Uri Shamir, IAHS
- Dr. Youba Sokona, OSS, Tunisia
- Prof. Soroosh Sorooshian, University of California, Irvine, USA
- Dr. Guido Soto, CAZALAC, Chile
- Dr. Raya Stephan, UNESCO-IHP
- Dr. Wilhelm Struckmeier, BGR, Germany
- Prof. Kuniyoshi Takeuchi, ICHARM, Japan
- Dr. Richard Taylor, University College London, UK
- Dr. J. Alberto Tejada-Guibert, UNESCO-IHP
- Prof. Ofelia Tujchneider, University of Litoral, Argentina
- Prof. Anthony Turton, CSIR, South Africa
- Prof. Lucio Ubertini, Italian IHP National Committee
- Dr. Olcay Unvert, WWAP
- Prof. Thassanee W. Wanick, Consulado Real da Tailândia em São Paulo, Brazil
- Prof. Paul Westerhoff, Arizona State University, Tempe, USA
- Prof. Robert Wilkinson, University of California, Santa Barbara, USA
- Prof. Han Zaisheng, China Geological Survey, China
- Dr. Daniel Zimmer, WWC

LOCAL ORGANIZING COMMITTEE

- Prof. William Cooper, University of California, Irvine, USA
- Prof. Jay Famiglietti, University of California, Irvine, USA
- Prof. Jean Fried, University of California, Irvine, USA
- Dr. Harry Helling, Ocean Institute (educational outreach)
- Ms. Ana Rothwell, Haley and Aldrich, Inc. (educational outreach)

Conference Secretariat:

- Ms. Diana Dehm, Haley and Aldrich, Inc.
- Ms. Megan Kinzer, Haley and Aldrich, Inc.





CALL FOR PARTICIPATION AND SUBMISSION OF EXTENDED ABSTRACTS

Policy and decision makers, administrative and technical staff at international, national and local levels, practitioners, consultants, researchers and educators, involved in water and water-related issues wishing to make a presentation during the Conference are invited to submit extended abstracts.

Consistent with the title of the conference, the subject should address one of the themes and topics as listed above. The extended abstracts should be presented in English and not exceed one and a half typed pages.

The International Scientific Committee will select from the extended abstracts those whose authors will be requested to prepare full length papers.

The participants are kindly requested to submit the extended abstracts by 30 April 2008 by e-mailing them to:

UNESCOUC@uci.edu

Please indicate in your abstract which of the Conference Theme and Topic your paper would contribute to.

IMPORTANT DATES

Second announcement and call for papers:

15 January 2008

Submission of abstracts: **30 April 2008**

Third Announcement and final programme:

31 Oct. 2008

SECRETARIAT CONTACT DETAILS

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Conference Scientific Programme CONTACT DETAILS

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